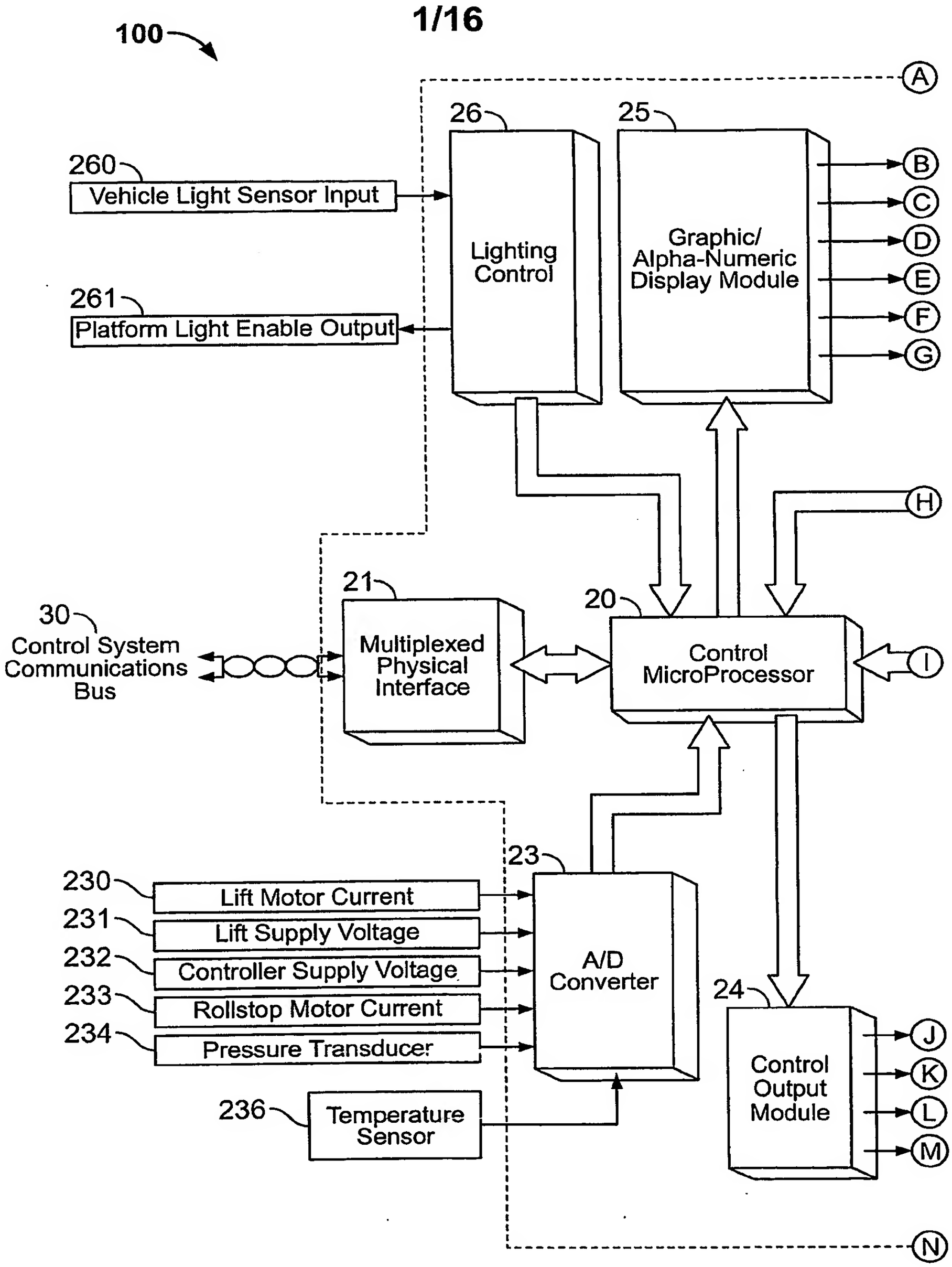
100
A
26
25
260
Vehicle Light Sensor Input
Lighting Control
Graphic/ Alpha-Numeric Display Module
B
C
261
Platform Light Enable Output
D
E
F
G
H
21
20
30
Control System Communications Bus
Multiplexed Physical Interface
Control MicroProcessor
I
23
230
Lift Motor Current
231
Lift Supply Voltage
232
Controller Supply Voltage
233
Rollstop Motor Current
234
Pressure Transducer
A/D Converter
24
Control Output Module
J
K
L
M
236
Temperature Sensor
N

FIG. 1A

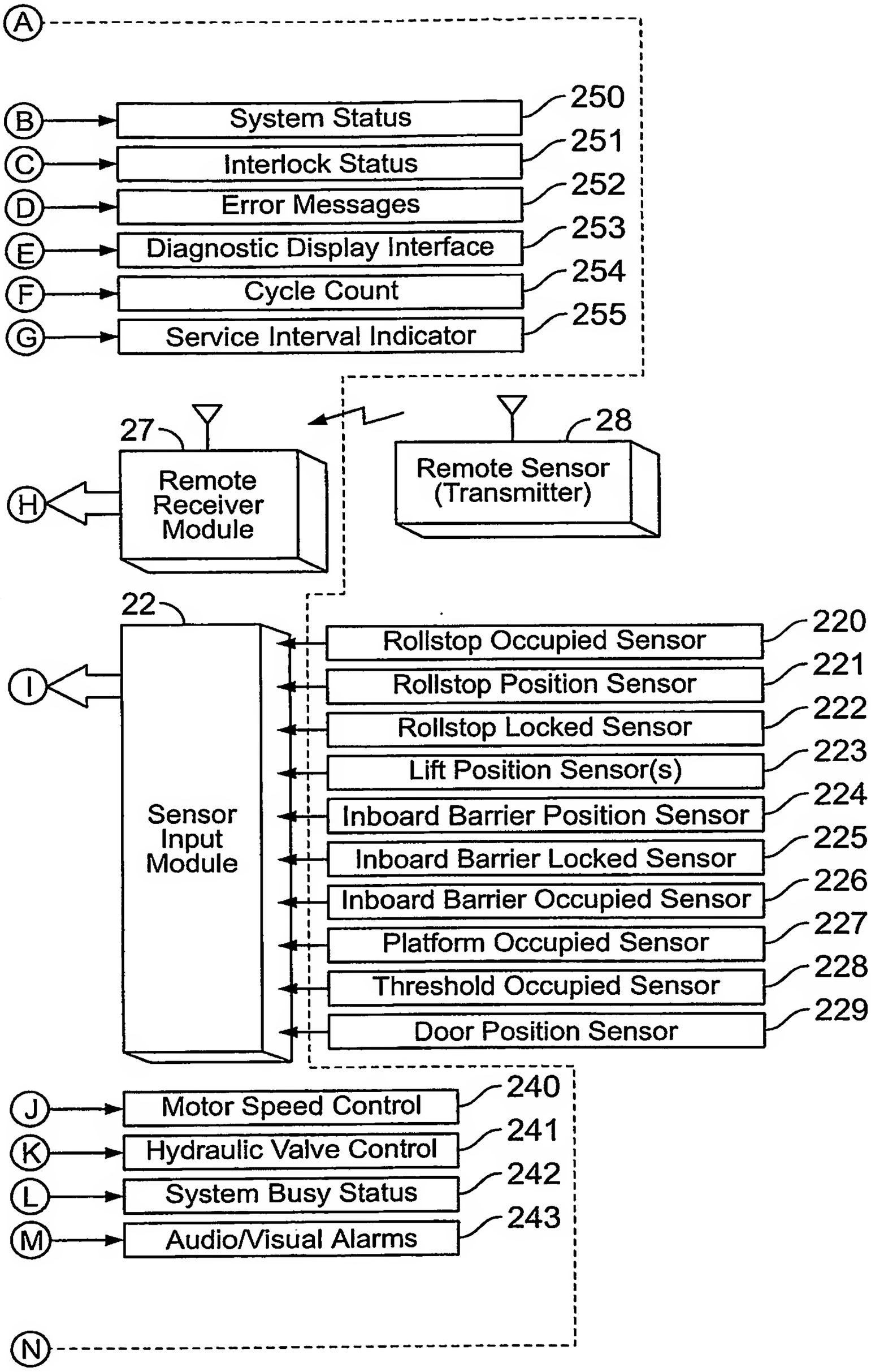
A
B
System Status
250
C
Interlock Status
251
D
Error Messages
252
E
Diagnostic Display Interface
253
F
Cycle Count
254
G
Service Interval Indicator
255
27
Remote Receiver Module
H
28
Remote Sensor (Transmitter)
22
Sensor Input Module
I
Rollstop Occupied Sensor
220
Rollstop Position Sensor
221
Rollstop Locked Sensor
222
Lift Position Sensor(s)
223
Inboard Barrier Position Sensor
224
Inboard Barrier Locked Sensor
225
Inboard Barrier Occupied Sensor
226
Platform Occupied Sensor
227
Threshold Occupied Sensor
228
Door Position Sensor
229
J
Motor Speed Control
240
K
Hydraulic Valve Control
241
L
System Busy Status
242
M
Audio/Visual Alarms
243
N

FIG. 1B

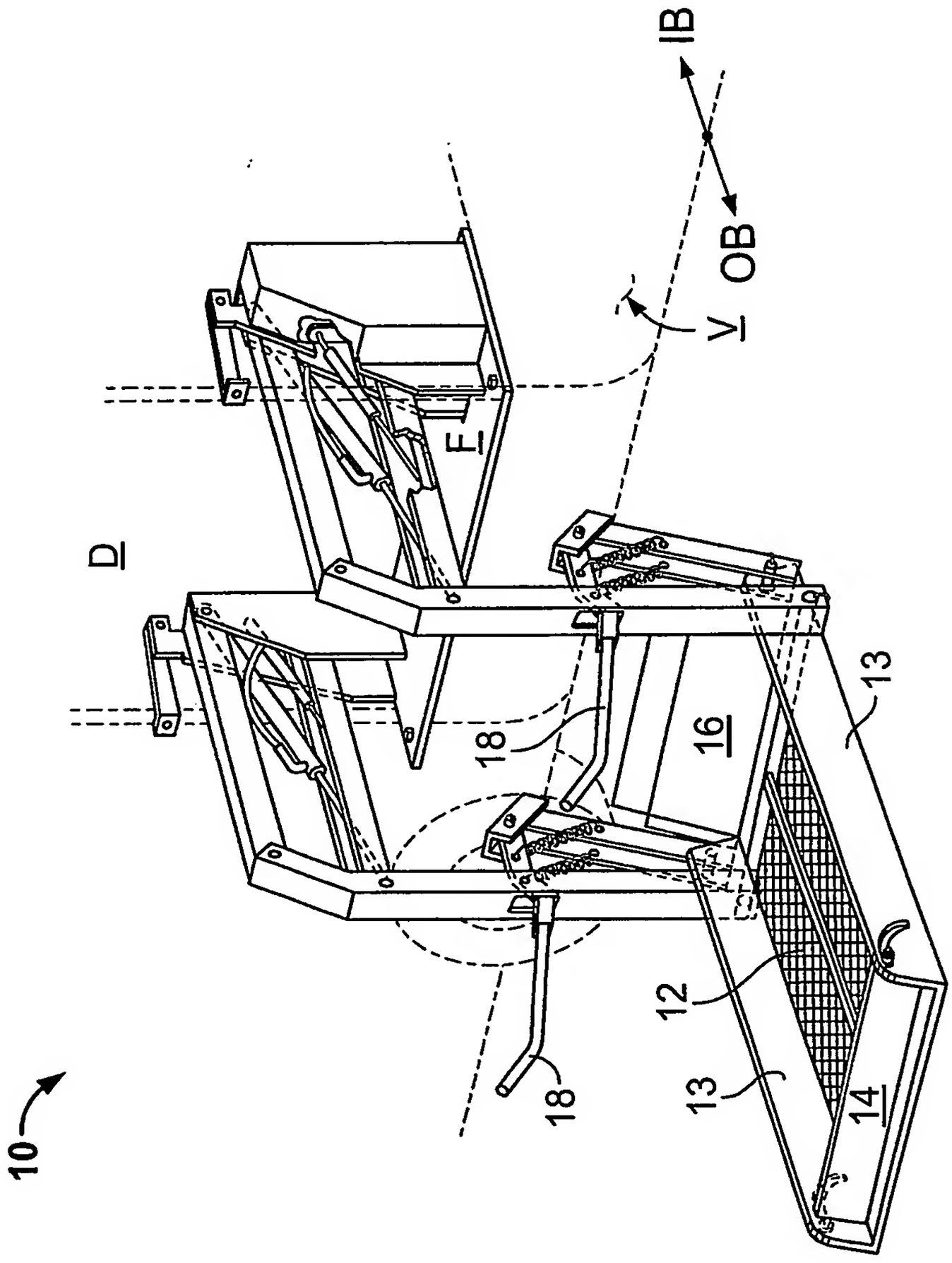

FIG. 2

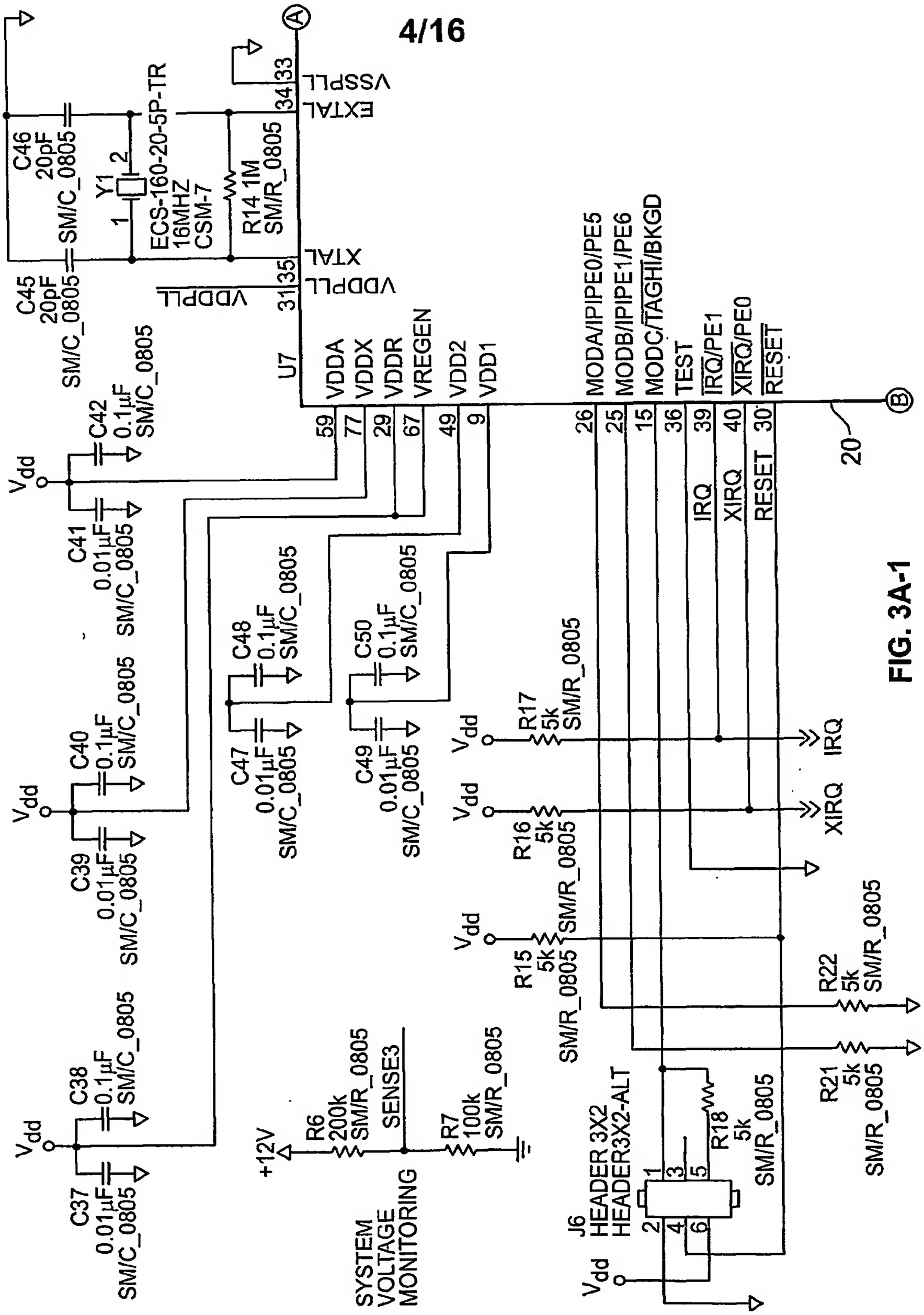
C46 20pF SM/C_0805
Y1 ECS-160-20-5P-TR 16MHZ CSM-7
R14 1M SM/R_0805
C45 20pF SM/C_0805
VSSPLL
EXTAL
XTAL
VDDPLL
U7
VDDA
VDDX
VDDR
VREGEN
VDD2
VDD1
MODA/IPIPE0/PE0/PE5
MODB/IPIPE1/PE1/PE6
MODC/TAGHI/BKGD
TEST
IRQ/PE1
XIRQ/PE0
RESET
59
77
29
67
49
9
26
25
15
36
39
40
30
20
C42 0.1µF SM/C_0805
C41 0.01µF SM/C_0805
C40 0.1µF SM/C_0805
C39 0.01µF SM/C_0805
C48 0.1µF SM/C_0805
C47 0.01µF SM/C_0805
C50 0.1µF SM/C_0805
C49 0.01µF SM/C_0805
C38 0.1µF SM/C_0805
C37 0.01µF SM/C_0805
R17 5k SM/R_0805
R16 5k SM/R_0805
R15 5k SM/R_0805
R22 5k SM/R_0805
R21 5k SM/R_0805
R18 5k SM/R_0805
R6 200k SM/R_0805
R7 100k SM/R_0805
+12V
SENSE3
SYSTEM VOLTAGE MONITORING
J6 HEADER 3X2 HEADER3X2-ALT
IRQ
XIRQ
RESET
Vdd

FIG. 3A-1

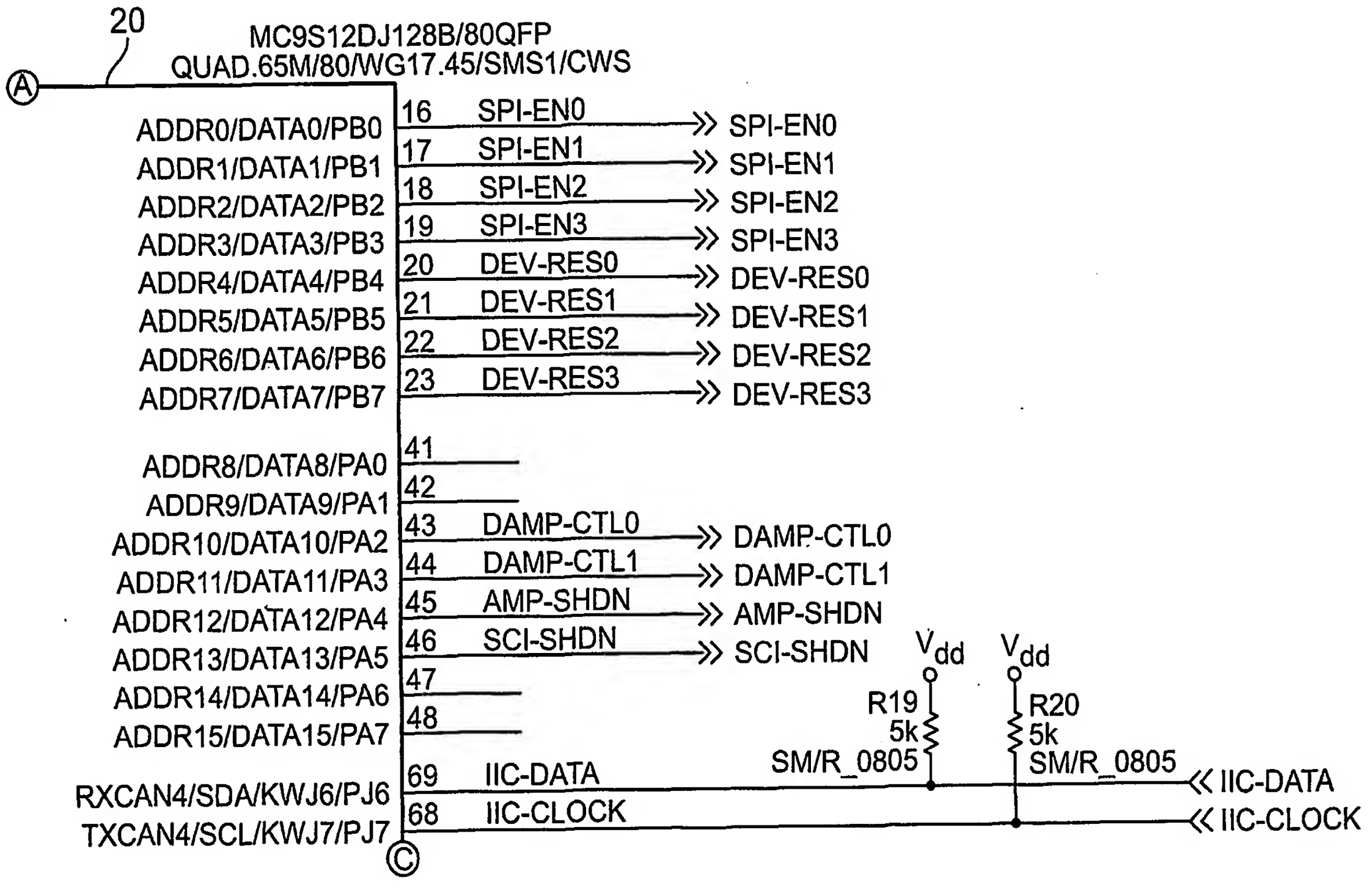
20
MC9S12DJ128B/80QFP
QUAD.65M/80/WG17.45/SMS1/CWS
A
ADDR0/DATA0/PB0
ADDR1/DATA1/PB1
ADDR2/DATA2/PB2
ADDR3/DATA3/PB3
ADDR4/DATA4/PB4
ADDR5/DATA5/PB5
ADDR6/DATA6/PB6
ADDR7/DATA7/PB7
ADDR8/DATA8/PA0
ADDR9/DATA9/PA1
ADDR10/DATA10/PA2
ADDR11/DATA11/PA3
ADDR12/DATA12/PA4
ADDR13/DATA13/PA5
ADDR14/DATA14/PA6
ADDR15/DATA15/PA7
RXCAN4/SDA/KWJ6/PJ6
TXCAN4/SCL/KWJ7/PJ7
16 SPI-EN0 SPI-EN0
17 SPI-EN1 SPI-EN1
18 SPI-EN2 SPI-EN2
19 SPI-EN3 SPI-EN3
20 DEV-RES0 DEV-RES0
21 DEV-RES1 DEV-RES1
22 DEV-RES2 DEV-RES2
23 DEV-RES3 DEV-RES3
41
42
43 DAMP-CTL0 DAMP-CTL0
44 DAMP-CTL1 DAMP-CTL1
45 AMP-SHDN AMP-SHDN
46 SCI-SHDN SCI-SHDN
47
48
69 IIC-DATA IIC-DATA
68 IIC-CLOCK IIC-CLOCK
Vdd
Vdd
R19
5k
SM/R_0805
R20
5k
SM/R_0805
C

FIG. 3A-2

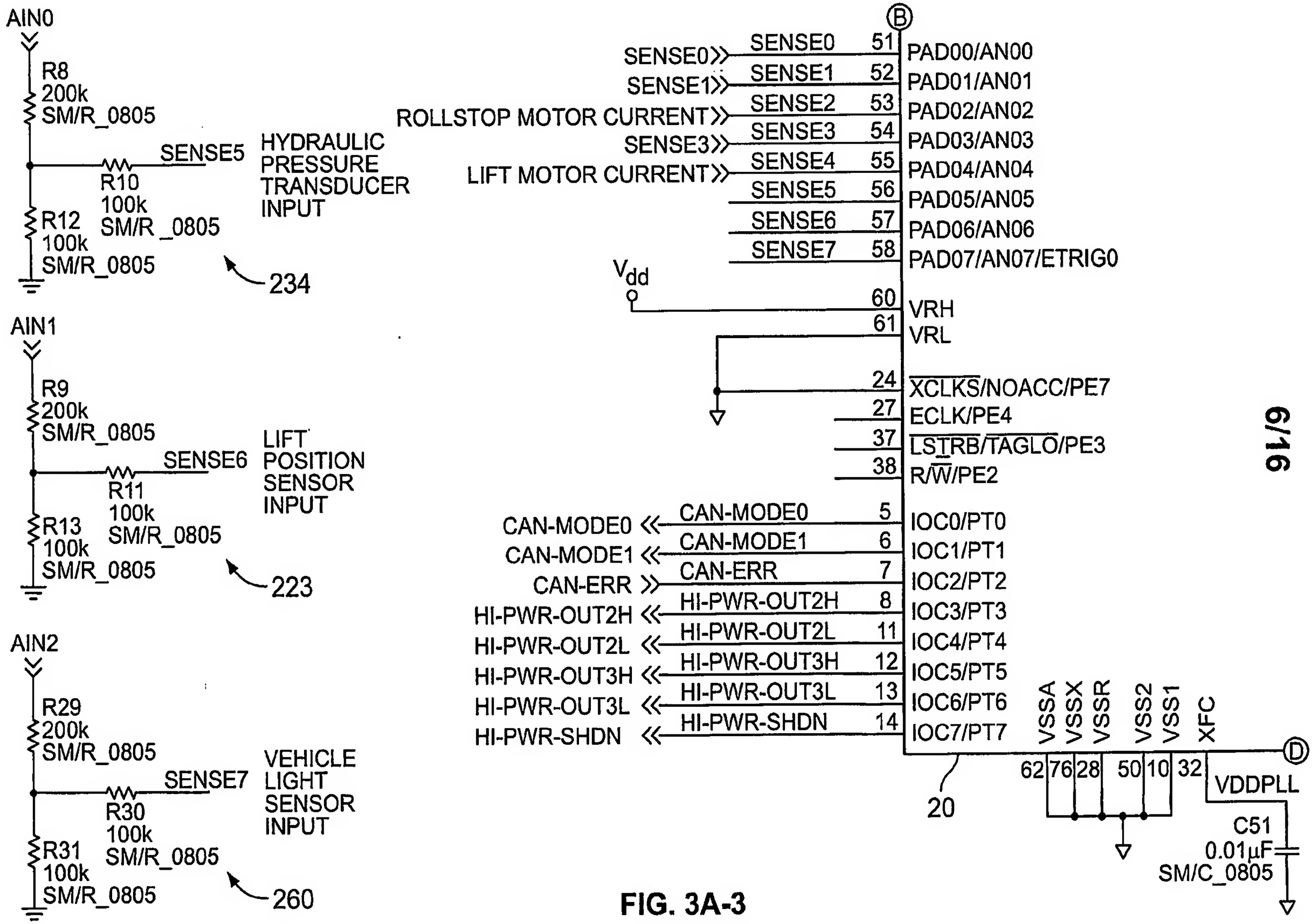
AIN0
R8
200k
SM/R_0805
SENSE5
R10
100k
SM/R _0805
R12
100k
SM/R_0805
HYDRAULIC PRESSURE TRANSDUCER INPUT
234
AIN1
R9
200k
SM/R_0805
SENSE6
R11
100k
SM/R_0805
R13
100k
SM/R_0805
LIFT POSITION SENSOR INPUT
223
AIN2
R29
200k
SM/R_0805
SENSE7
R30
100k
SM/R_0805
R31
100k
SM/R_0805
VEHICLE LIGHT SENSOR INPUT
260
B
SENSE0 SENSE0 51 PAD00/AN00
SENSE1 SENSE1 52 PAD01/AN01
ROLLSTOP MOTOR CURRENT SENSE2 53 PAD02/AN02
SENSE3 SENSE3 54 PAD03/AN03
LIFT MOTOR CURRENT SENSE4 55 PAD04/AN04
SENSE5 56 PAD05/AN05
SENSE6 57 PAD06/AN06
SENSE7 58 PAD07/AN07/ETRIG0
Vdd
60 VRH
61 VRL
24 XCLKS/NOACC/PE7
27 ECLK/PE4
37 LSTRB/TAGLO/PE3
38 R/W/PE2
CAN-MODE0 CAN-MODE0 5 IOC0/PT0
CAN-MODE1 CAN-MODE1 6 IOC1/PT1
CAN-ERR CAN-ERR 7 IOC2/PT2
HI-PWR-OUT2H HI-PWR-OUT2H 8 IOC3/PT3
HI-PWR-OUT2L HI-PWR-OUT2L 11 IOC4/PT4
HI-PWR-OUT3H HI-PWR-OUT3H 12 IOC5/PT5
HI-PWR-OUT3L HI-PWR-OUT3L 13 IOC6/PT6
HI-PWR-SHDN HI-PWR-SHDN 14 IOC7/PT7
VSSA VSSX VSSR VSS2 VSS1 XFC
62 76 28 50 10 32
VDDPLL
20
C51
0.01µF
SM/C_0805
D

FIG. 3A-3

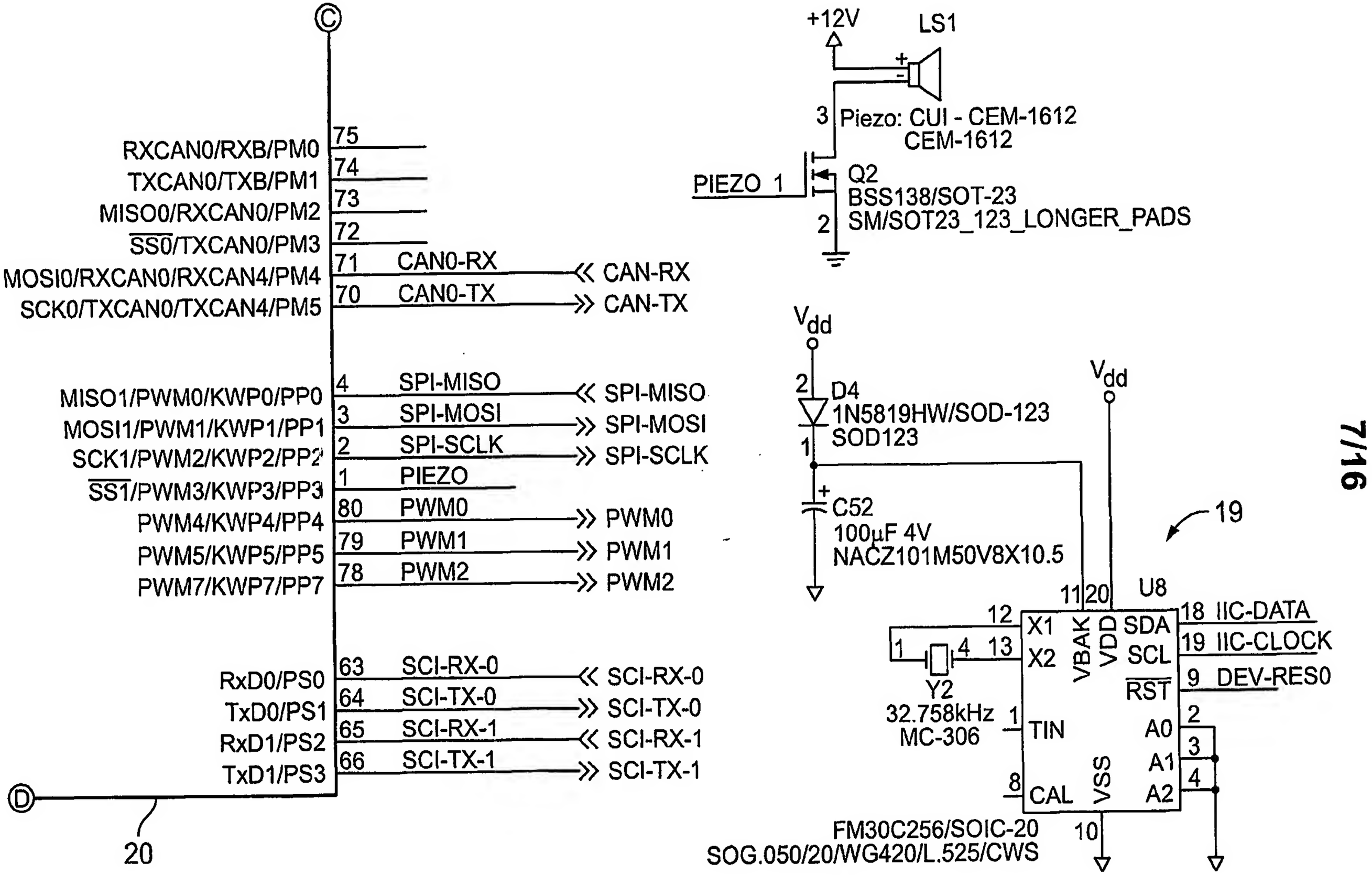
©
RXCAN0/RXB/PM0 75
TXCAN0/TXB/PM1 74
MISO0/RXCAN0/PM2 73
SS0/TXCAN0/PM3 72
MOSI0/RXCAN0/RXCAN4/PM4 71 CAN0-RX « CAN-RX
SCK0/TXCAN0/TXCAN4/PM5 70 CAN0-TX » CAN-TX
MISO1/PWM0/KWP0/PP0 4 SPI-MISO « SPI-MISO
MOSI1/PWM1/KWP1/PP1 3 SPI-MOSI » SPI-MOSI
SCK1/PWM2/KWP2/PP2 2 SPI-SCLK » SPI-SCLK
SS1/PWM3/KWP3/PP3 1 PIEZO
PWM4/KWP4/PP4 80 PWM0 » PWM0
PWM5/KWP5/PP5 79 PWM1 » PWM1
PWM7/KWP7/PP7 78 PWM2 » PWM2
RxD0/PS0 63 SCI-RX-0 « SCI-RX-0
TxD0/PS1 64 SCI-TX-0 » SCI-TX-0
RxD1/PS2 65 SCI-RX-1 « SCI-RX-1
TxD1/PS3 66 SCI-TX-1 » SCI-TX-1
Ⓓ
20
+12V
LS1
3 Piezo: CUI - CEM-1612
CEM-1612
PIEZO_1
Q2
BSS138/SOT-23
2 SM/SOT23_123_LONGER_PADS
Vdd
2 D4
1N5819HW/SOD-123
1 SOD123
C52
100µF 4V
NACZ101M50V8X10.5
Vdd
19
11 20 U8
12 X1 VBAK VDD SDA 18 IIC-DATA
1 4 13 X2 SCL 19 IIC-CLOCK
Y2
32.758kHz
MC-306
RST 9 DEV-RES0
1 TIN A0 2
A1 3
8 CAL VSS A2 4
FM30C256/SOIC-20
SOG.050/20/WG420/L.525/CWS
10

FIG. 3A-4

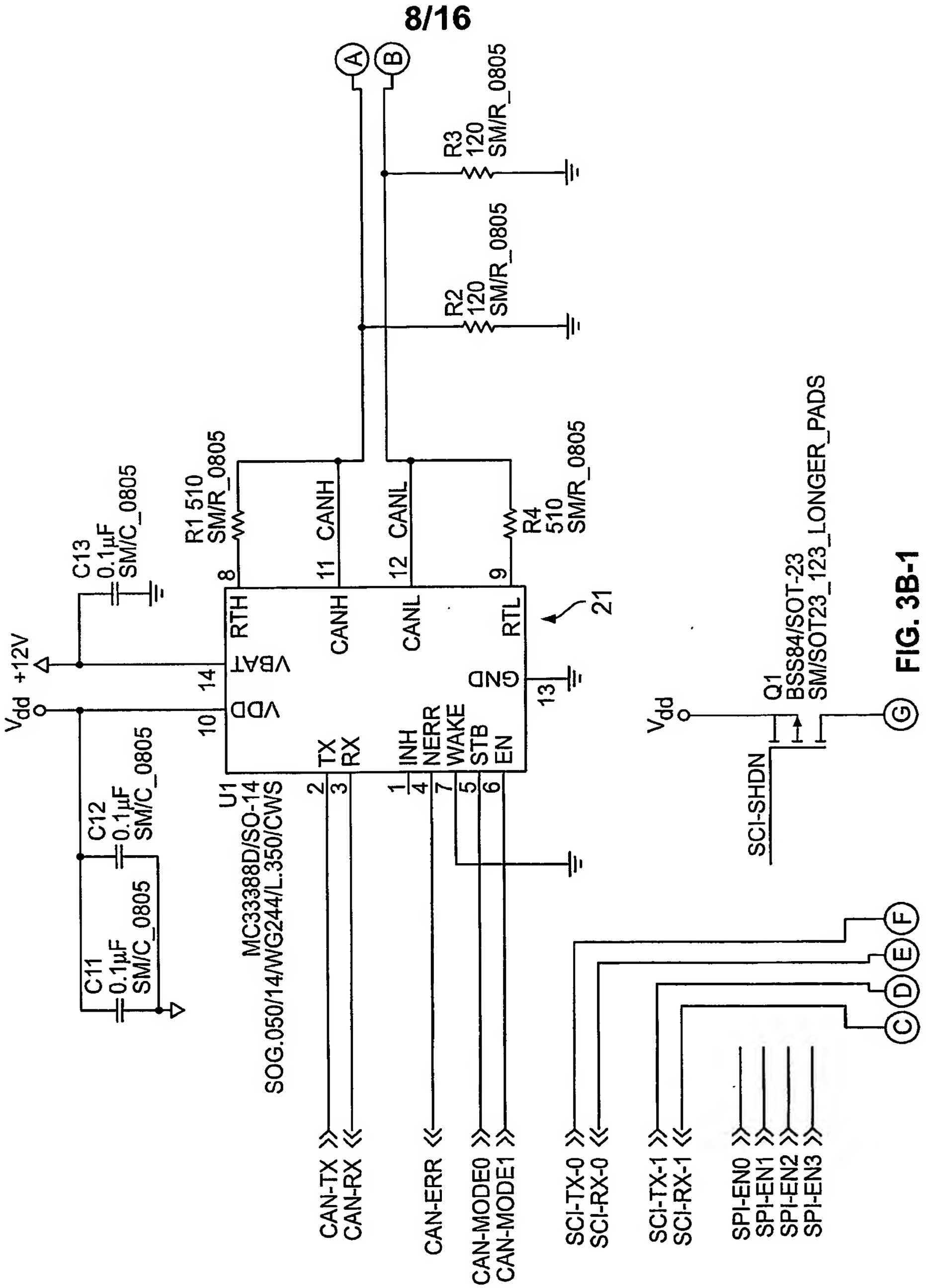
A
B
R3 120 SM/R_0805
R2 120 SM/R_0805
R1 510 SM/R_0805
R4 510 SM/R_0805
C13 0.1µF SM/C_0805
C12 0.1µF SM/C_0805
C11 0.1µF SM/C_0805
+12V
Vdd
VBAT
VDD
RTH
CANH
CANL
RTL
GND
TX
RX
INH
NERR
WAKE
STB
EN
U1
MC33388D/SO-14
SOG.050/14/WG244/L.350/CWS
21
Q1
BSS84/SOT-23
SM/SOT23_123_LONGER_PADS
SCI-SHDN
CAN-TX
CAN-RX
CAN-ERR
CAN-MODE0
CAN-MODE1
SCI-TX-0
SCI-RX-0
SCI-TX-1
SCI-RX-1
SPI-EN0
SPI-EN1
SPI-EN2
SPI-EN3
C
D
E
F
G

FIG. 3B-1

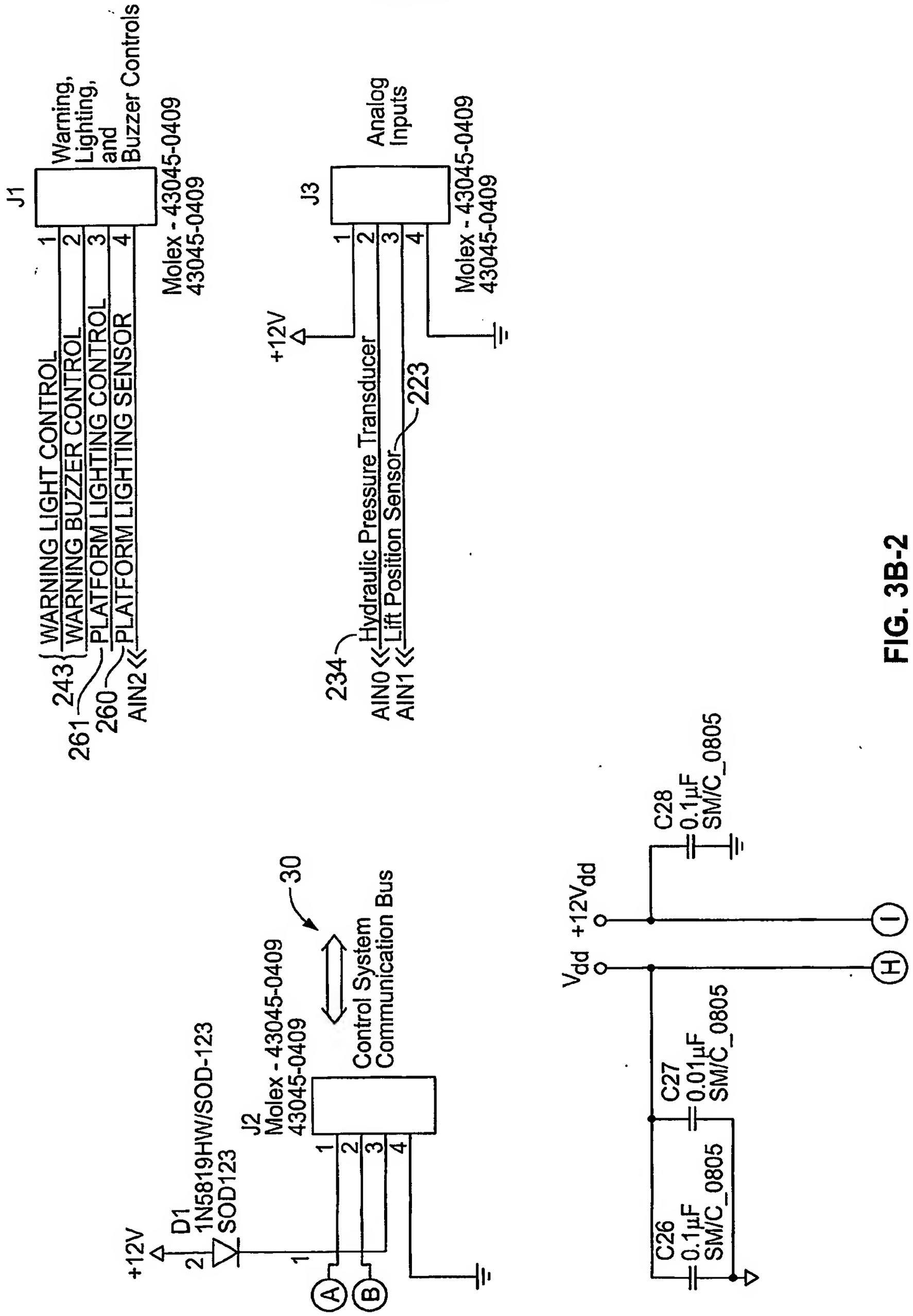
J1
Warning, Lighting, and Buzzer Controls
Molex - 43045-0409
43045-0409
1
2
3
4
WARNING LIGHT CONTROL
WARNING BUZZER CONTROL
PLATFORM LIGHTING CONTROL
PLATFORM LIGHTING SENSOR
243
261
260
AIN2
J3
Analog Inputs
Molex - 43045-0409
43045-0409
+12V
234
AIN0
AIN1
Hydraulic Pressure Transducer
Lift Position Sensor
223
J2
Molex - 43045-0409
43045-0409
30
Control System Communication Bus
+12V
D1
1N5819HW/SOD-123
SOD123
A
B
C28
0.1µF
SM/C_0805
V_{dd} +12V_{dd}
C27
0.01µF
SM/C_0805
C26
0.1µF
SM/C_0805
L
H

FIG. 3B-2

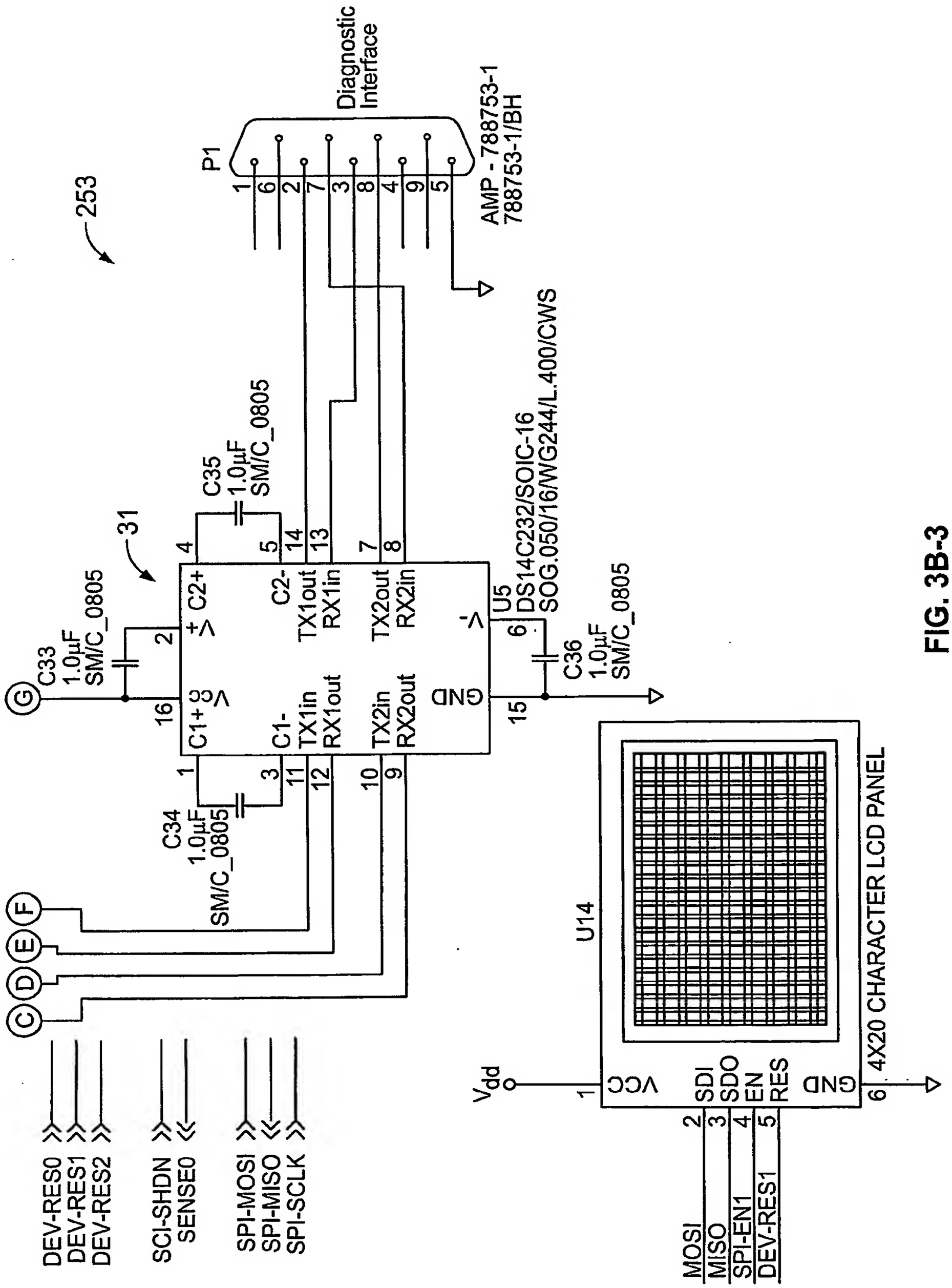
253
P1
Diagnostic Interface
AMP - 788753-1
788753-1/BH
1
6
2
7
3
8
4
9
5
31
C33
1.0µF
SM/C_0805
C34
1.0µF
SM/C_0805
C35
1.0µF
SM/C_0805
C36
1.0µF
SM/C_0805
C1+
C1-
C2+
C2-
TX1in
RX1out
TX2in
RX2out
TX1out
RX1in
TX2out
RX2in
GND
U5
DS14C232/SOIC-16
SOG.050/16/WG244/L.400/CWS
U14
4X20 CHARACTER LCD PANEL
VCC
SDI
SDO
EN
RES
GND
MOSI
MISO
SPI-EN1
DEV-RES1
DEV-RES0
DEV-RES1
DEV-RES2
SCI-SHDN
SENSE0
SPI-MOSI
SPI-MISO
SPI-SCLK

FIG. 3B-3

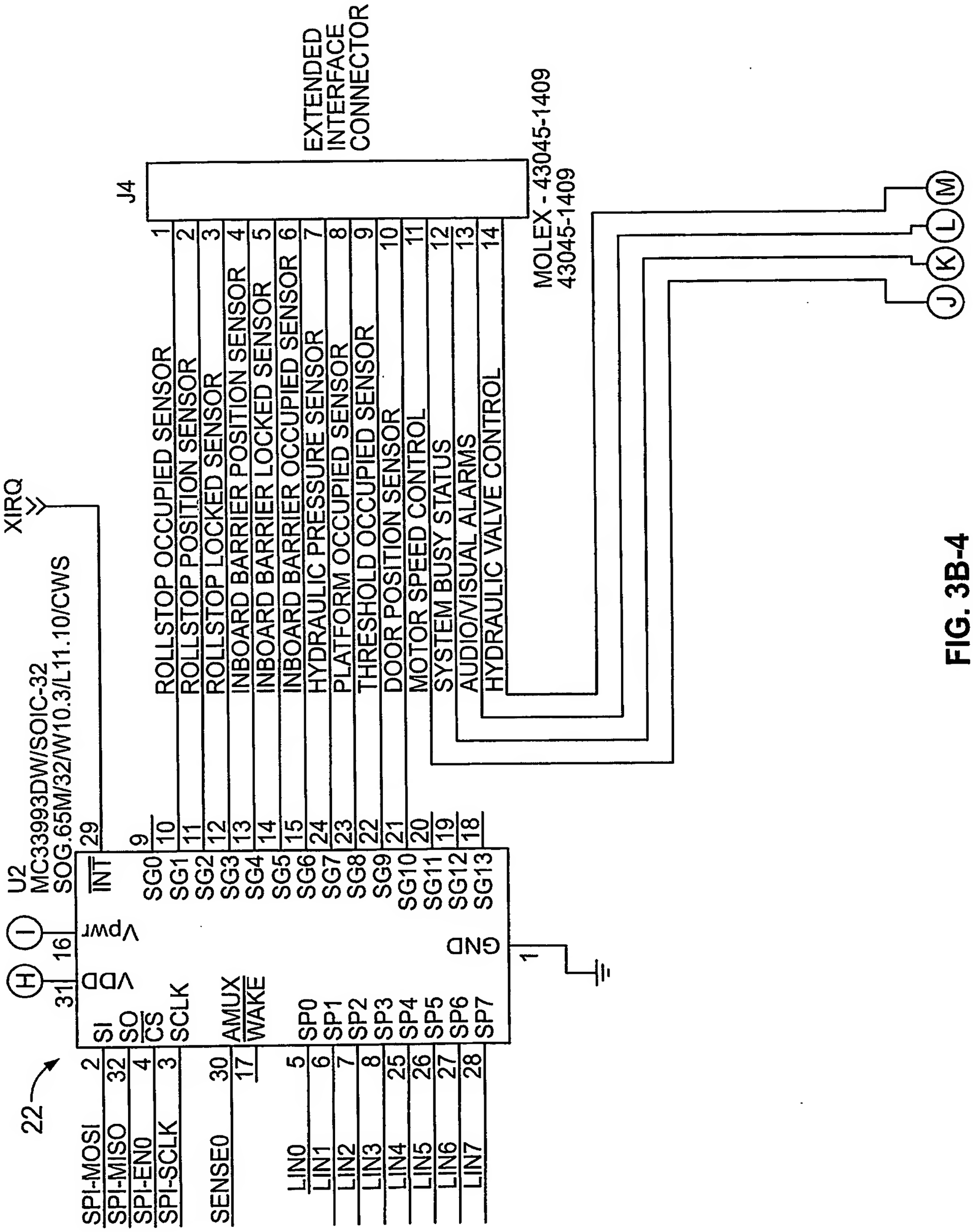
J4
EXTENDED INTERFACE CONNECTOR
MOLEX - 43045-1409
43045-1409
1 2 3 4 5 6 7 8 9 10 11 12 13 14
M L K J
U2
MC33993DW/SOIC-32
SOG.65M/32/W10.3/L11.10/CWS
XIRQ
INT 29
SG0 9
SG1 10
SG2 11
SG3 12
SG4 13
SG5 14
SG6 15
SG7 24
SG8 23
SG9 22
SG10 21
SG11 20
SG12 19
SG13 18
ROLLSTOP OCCUPIED SENSOR
ROLLSTOP POSITION SENSOR
ROLLSTOP LOCKED SENSOR
INBOARD BARRIER POSITION SENS
INBOARD BARRIER LOCKED SENSO
INBOARD BARRIER OCCUPIED SEN
HYDRAULIC PRESSURE SENSOR
PLATFORM OCCUPIED SENSOR
THRESHOLD OCCUPIED SENSOR
DOOR POSITION SENSOR
MOTOR SPEED CONTROL
SYSTEM BUSY STATUS
AUDIO/VISUAL ALARMS
HYDRAULIC VALVE CONTROL
I
H
Vpwr 16
VDD 31
GND 1
SI 2
SO 32
CS 4
SCLK 3
AMUX 30
WAKE 17
SP0 5
SP1 6
SP2 7
SP3 8
SP4 25
SP5 26
SP6 27
SP7 28
SPI-MOSI
SPI-MISO
SPI-EN0
SPI-SCLK
SENSE0
LIN0
LIN1
LIN2
LIN3
LIN4
LIN5
LIN6
LIN7
22

FIG. 3B-4

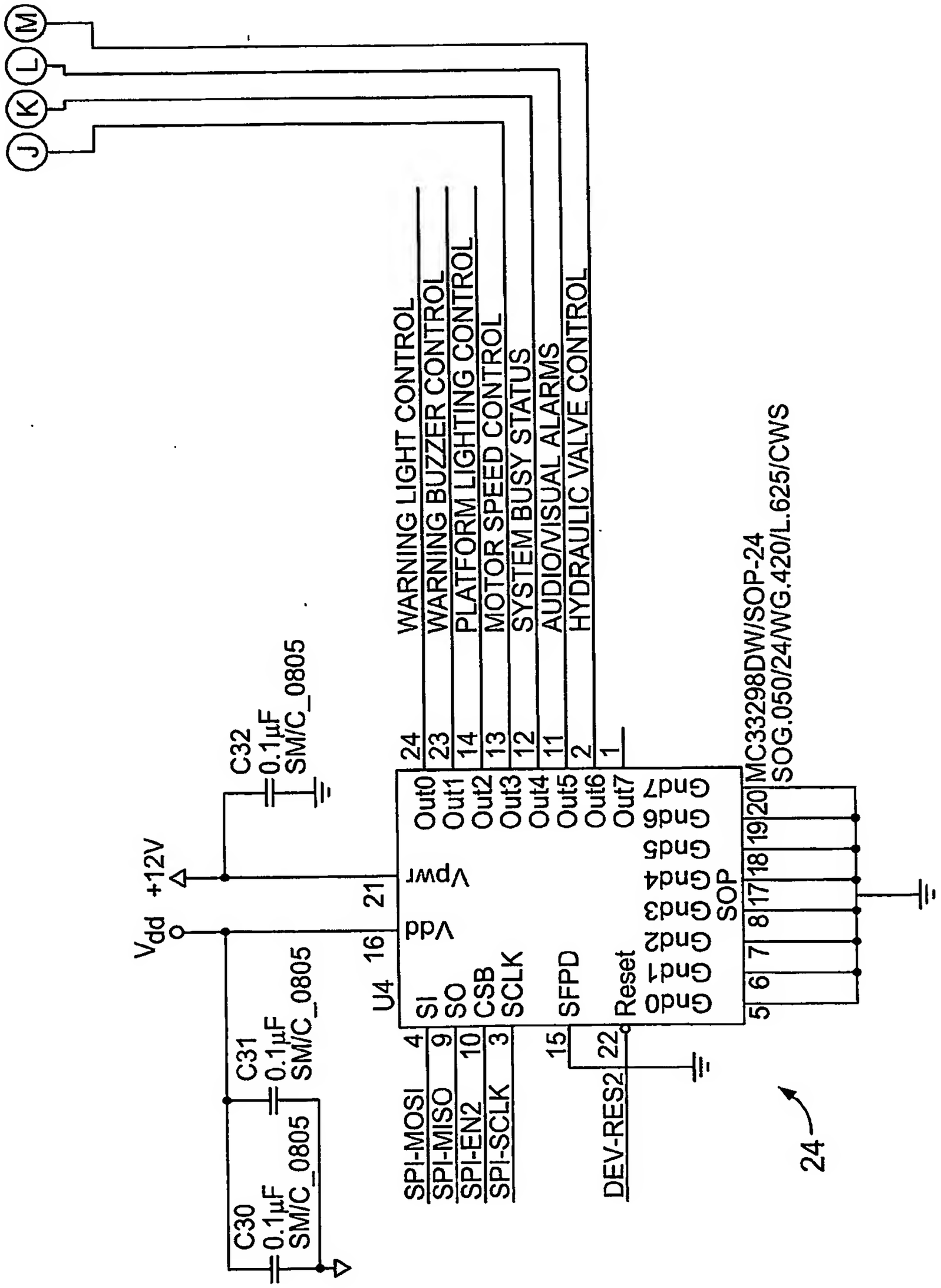
M
L
K
J
WARNING LIGHT CONTROL
WARNING BUZZER CONTROL
PLATFORM LIGHTING CONTROL
MOTOR SPEED CONTROL
SYSTEM BUSY STATUS
AUDIO/VISUAL ALARMS
HYDRAULIC VALVE CONTROL
24
23
14
13
12
11
2
1
Out0
Out1
Out2
Out3
Out4
Out5
Out6
Out7
Gnd7
Gnd6
Gnd5
Gnd4
Gnd3
Gnd2
Gnd1
Gnd0
Vpwr
Vdd
SI
SO
CSB
SCLK
SFPD
Reset
SOP
MC33298DW/SOP-24
SOG.050/24/WG.420/L.625/CWS
19
20
18
17
8
7
6
5
21
16
4
9
10
3
15
22
U4
+12V
Vdd
C32
0.1µF
SM/C_0805
C31
0.1µF
SM/C_0805
C30
0.1µF
SM/C_0805
SPI-MOSI
SPI-MISO
SPI-EN2
SPI-SCLK
DEV-RES2
24

FIG. 3B-5

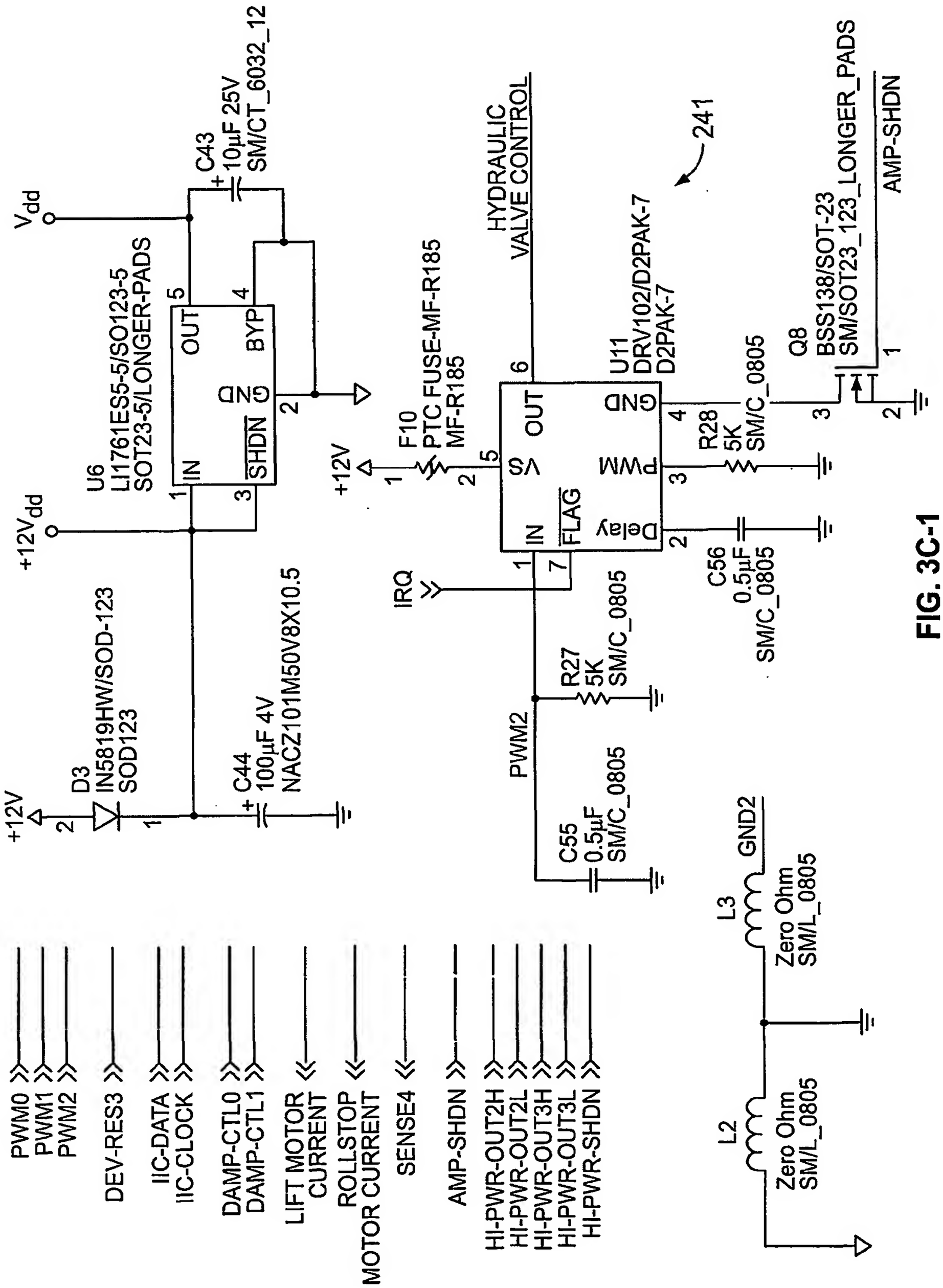
PWM0
PWM1
PWM2
DEV-RES3
IIC-DATA
IIC-CLOCK
DAMP-CTL0
DAMP-CTL1
LIFT MOTOR CURRENT
ROLLSTOP MOTOR CURRENT
SENSE4
AMP-SHDN
HI-PWR-OUT2H
HI-PWR-OUT2L
HI-PWR-OUT3H
HI-PWR-OUT3L
HI-PWR-SHDN
+12V
D3
IN5819HW/SOD-123
SOD123
+12Vdd
C44
100µF 4V
NACZ101M50V8X10.5
U6
LI1761ES5-5/SO123-5
SOT23-5/LONGER-PADS
IN
SHDN
GND
OUT
BYP
C43
10µF 25V
SM/CT_6032_12
+12V
F10
PTC FUSE-MF-R185
MF-R185
IRQ
PWM2
R27
5K
SM/C_0805
C55
0.5µF
SM/C_0805
U11
DRV102/D2PAK-7
D2PAK-7
IN
FLAG
Delay
PWM
VS
OUT
GND
241
C56
0.5µF
SM/C_0805
R28
5K
SM/C_0805
Q8
BSS138/SOT-23
SM/SOT23_123_LONGER_PADS
AMP-SHDN
L3
Zero Ohm
SM/L_0805
GND2
L2
Zero Ohm
SM/L_0805

FIG. 3C-1

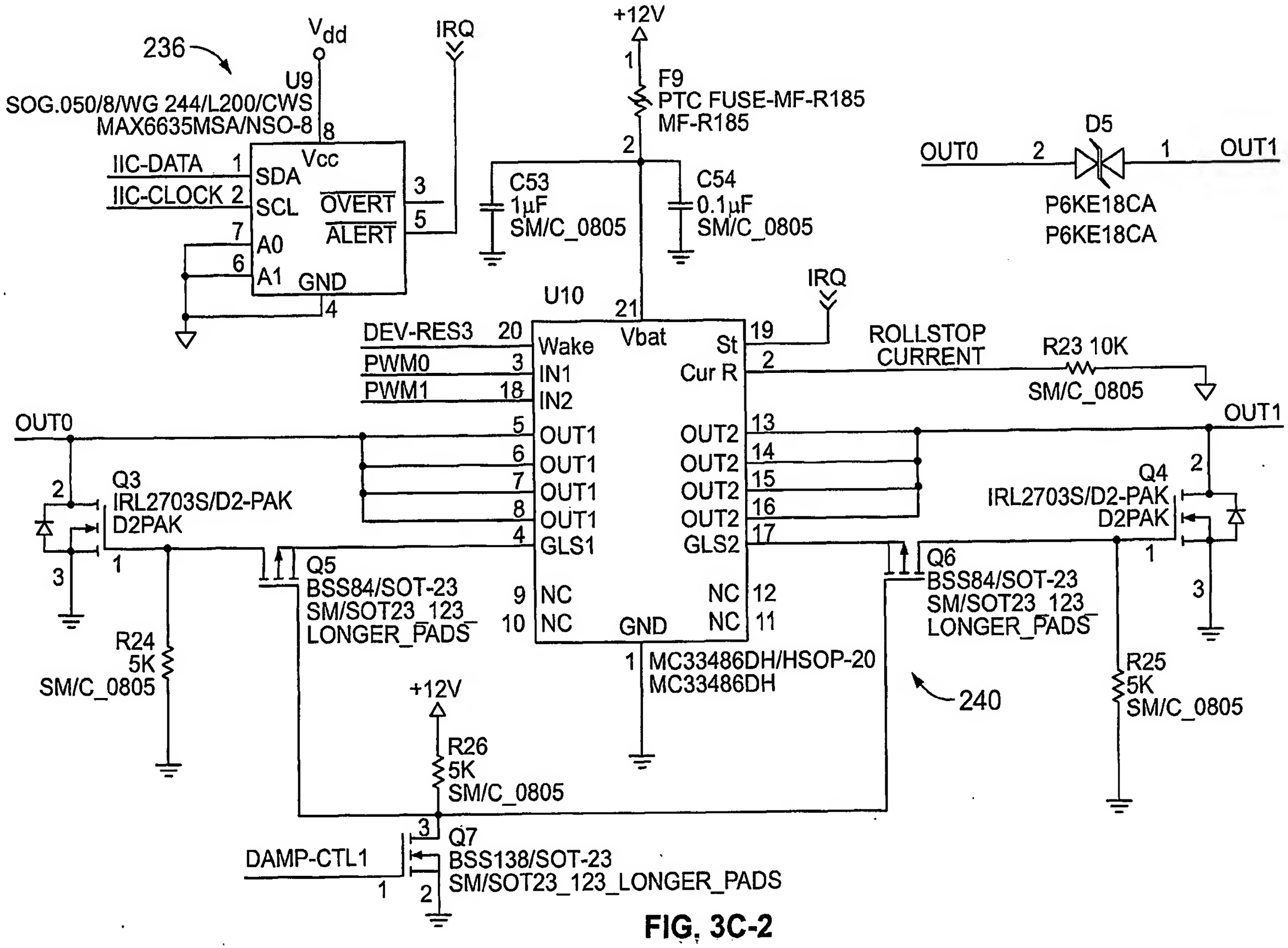
236
U9
SOG.050/8/WG 244/L200/CWS
MAX6635MSA/NSO-8
Vdd
IRQ
IIC-DATA
IIC-CLOCK
SDA
SCL
A0
A1
Vcc
OVERT
ALERT
GND
+12V
F9
PTC FUSE-MF-R185
MF-R185
C53
1µF
SM/C_0805
C54
0.1µF
SM/C_0805
D5
OUT0
OUT1
P6KE18CA
P6KE18CA
U10
Vbat
DEV-RES3
PWM0
PWM1
Wake
IN1
IN2
OUT1
GLS1
NC
GND
St
Cur R
OUT2
GLS2
ROLLSTOP
CURRENT
R23 10K
SM/C_0805
Q3
IRL2703S/D2-PAK
D2PAK
Q4
IRL2703S/D2-PAK
D2PAK
Q5
BSS84/SOT-23
SM/SOT23_123_
LONGER_PADS
Q6
BSS84/SOT-23
SM/SOT23_123_
LONGER_PADS
R24
5K
SM/C_0805
R25
5K
SM/C_0805
MC33486DH/HSOP-20
MC33486DH
240
R26
5K
SM/C_0805
Q7
BSS138/SOT-23
SM/SOT23_123_LONGER_PADS
DAMP-CTL1

FIG. 3C-2

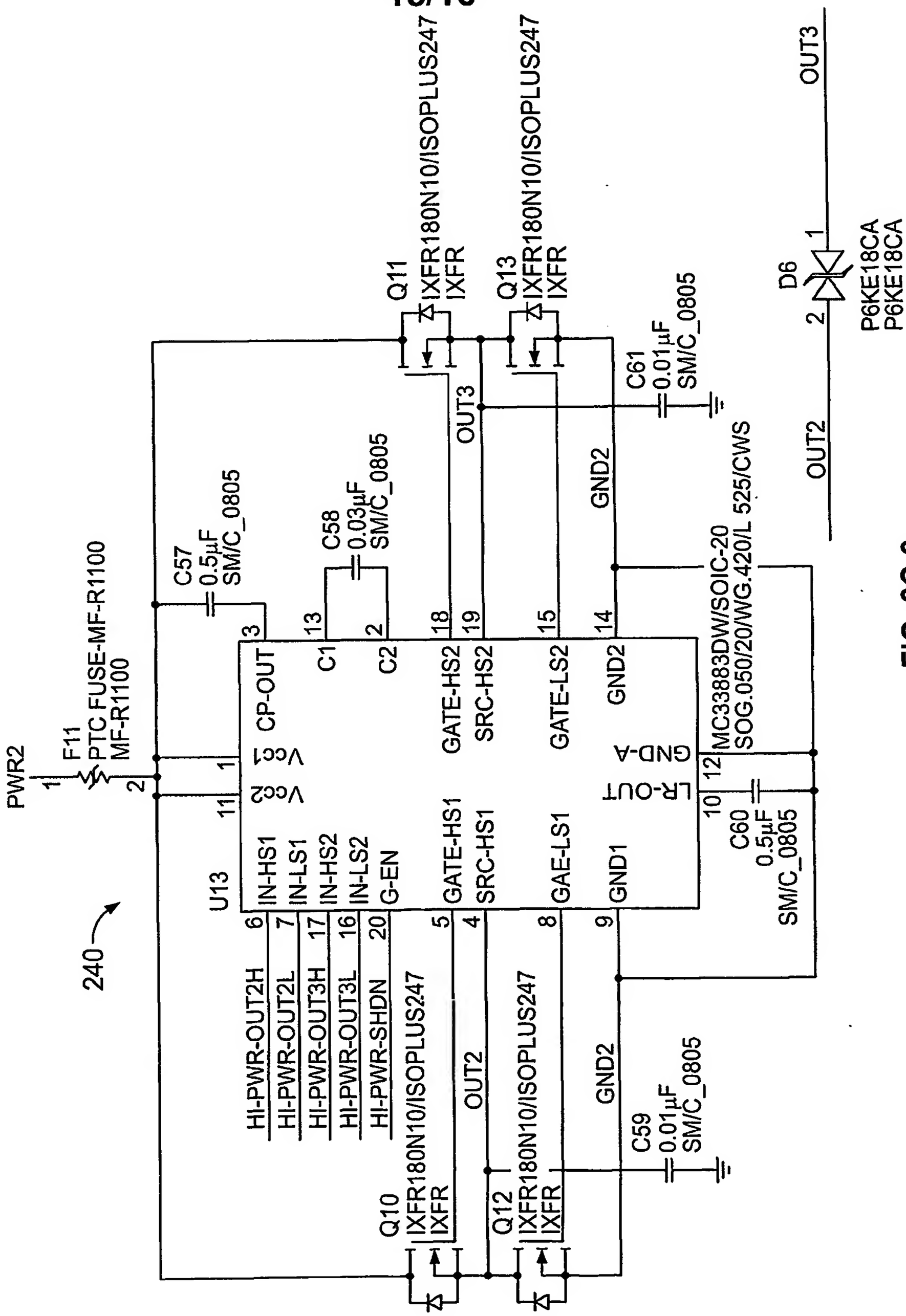
240
PWR2
F11
PTC FUSE-MF-R1100
MF-R1100
C57
0.5µF
SM/C_0805
C58
0.03µF
SM/C_0805
C61
0.01µF
SM/C_0805
C59
0.01µF
SM/C_0805
C60
0.5µF
SM/C_0805
U13
CP-OUT
Vcc1
Vcc2
C1
C2
GATE-HS2
SRC-HS2
GATE-LS2
GND2
GND-A
LR-OUT
GATE-HS1
SRC-HS1
GAE-LS1
GND1
IN-HS1
IN-LS1
IN-HS2
IN-LS2
G-EN
HI-PWR-OUT2H
HI-PWR-OUT2L
HI-PWR-OUT3H
HI-PWR-OUT3L
HI-PWR-SHDN
MC33883DW/SOIC-20
SOG.050/20/WG.420/L 525/CWS
Q10
Q11
Q12
Q13
IXFR180N10/ISOPLUS247
IXFR
OUT2
OUT3
D6
P6KE18CA
OUT3
OUT2
GND2

FIG. 3C-3

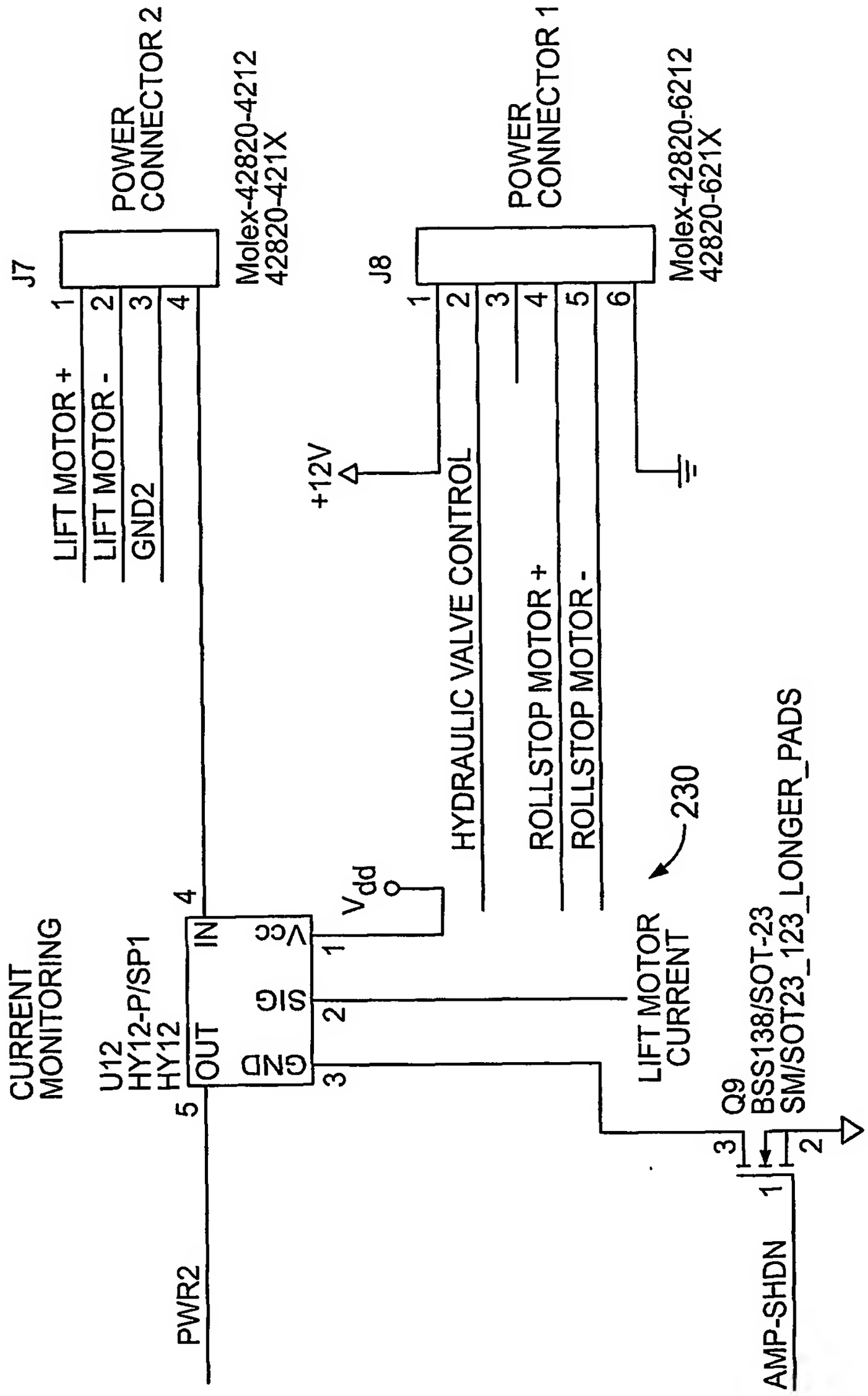
POWER CONNECTOR 2
Molex-42820-4212
42820-421X
J7
LIFT MOTOR +
LIFT MOTOR -
GND2
POWER CONNECTOR 1
Molex-42820-6212
42820-621X
J8
+12V
HYDRAULIC VALVE CONTROL
ROLLSTOP MOTOR +
ROLLSTOP MOTOR -
230
CURRENT MONITORING
U12
HY12-P/SP1
HY12
IN
OUT
GND
SIG
Vcc
PWR2
LIFT MOTOR CURRENT
Q9
BSS138/SOT-23
SM/SOT23_123_LONGER_PADS
AMP-SHDN

FIG. 3C-4